

II. Remarks

By this amendment, applicant has amended claims 1-14, without prejudice.

Claims 1-14 are pending in the application. Applicant asserts that the amendments to claims 2-6 and 8-14, where the word "A" is replaced by the word "The," where the word "step(s)" is removed, and where the word "whereby" is replaced by the word "thereby" are associated with claim structure preferences. Applicant also asserts that the addition of the word "the" before "cathode plate(s)" in various claims, corrects the antecedent basis for "cathode plate(s)," while the replacement of the word "a" with the word "an" in claim 7 corrects grammar in claim 7. Thus, no new matter is introduced. Favorable reconsideration of this application is respectfully requested in light of the following detailed discussion.

Restriction Requirement

Examiner Lee has withdrawn the restriction requirements that were mailed 9/7/2006 and has stated that claims 1-14 are pending and have been examined. Applicant appreciates the Examiner's withdrawal of the restriction and responds accordingly herein to the instant Office Action.

Claim Rejections – 35 U.S.C. § 102

a) The Examiner has rejected claims 1-2 under 35 U.S.C. 102(e) as being anticipated by Frank (U.S. Patent No. 7,138,202, hereinafter Frank).

The Examiner asserts that Frank teaches the claimed process as evidenced at column 11, lines 20-52 and at column 15, line 44 to column 17, line 28.

Applicant, however, traverses these rejections of claims 1-2 and asserts that independent claim 1, from which claim 2 directly depends, at least requires the limitations of placing the anode plate, the cathode plate and the MEA (membrane electrode assembly) within a mold; injecting a sealing material into the mold, thereby the seal material fills grooves formed on the anode or the cathode plates to form an insulation layer, the material flows through through-holes formed in the grooves of either the anode plate or the cathode plate to form a sealing layer between the plates and to form an edge seal about a portion of the MEA; and curing the sealing material to bind the anode plate to the cathode plate, thereby forming a bipolar plate module.

After studying Frank, applicant cannot find where Frank at least requires the limitations of placing the anode plate, the cathode plate and the MEA within a mold; injecting a sealing material into the mold, thereby the seal material fills grooves formed on the anode or the cathode plates to form an insulation layer, the material flows through through-holes formed in the grooves of either the anode plate or the cathode plate to form a sealing layer between the plates, and to bind the anode plate to the cathode plate, thereby forming a bipolar plate module.

Instead, applicant finds Frank to teach providing seal configurations "for" fuel cell assemblies that include an anode plate, a cathode plate, and an MEA, thus forming a

"seal in place" that can be bonded "to" the fuel cell assembly (see, for example, Abstract).

However, applicant cannot find where the formed Frank bipolar plate module utilizes the sealing material to form an insulation layer on a plate, nor does applicant find a sealing layer formed between the plates, nor does applicant find the sealing material to bind the anode plate to the cathode plate, as claim 1 requires.

In fact, applicant finds Frank to teach away from the claimed invention by disclosing that "conventional end elements, clamping elements, and the like" are utilized to mount the fuel cell elements, in otherwise conventional manners (see, for example, column 8, lines 35-41 and Fig. 4).

Since the Examiner has not identified specific elements within Frank that the Examiner might allege are equivalent to the claimed invention, applicant finds these 35 USC 102 rejections of claims 1 and 2 to merely be conjecture.

Therefore, applicant respectfully submits that independent claim 1, and claim 2 which directly depends from claim 1, are not anticipated by Frank, as the inventions defined thereby are not identically disclosed in Frank, as required by 35 U.S.C. § 102(e).

Consequently, claims 1-2 should be allowed over Frank. Accordingly, withdrawal of the rejection of claims 1-2 and favorable reconsideration of claims 1-2 are respectfully requested.

b) The Examiner has rejected claims 7-9 and 12-14 under 35 U.S.C. 102(e) as being anticipated by Wangerow (U.S. Patent No. 6,730,426, hereinafter Wangerow).

The Examiner asserts that Wangerow teaches the claimed process as evidenced in the Abstract, at column 5, lines 44-60, and in Fig. 1.

Applicant, however, traverses these rejections of claims 7-9 and 12-14 and assert that independent claim 7, from which claims 8-9 and 12-14 directly or indirectly depend, at least require the limitations of screen printing a sealing material upon one of an anode plate and a cathode plate; positioning the MEA upon one of the anode plate and the cathode plate; placing the other one of the anode plate and the cathode plate upon the MEA; curing the sealing material to form a sealing layer between the anode and the cathode plates and to form an edge seal about a portion of the MEA, thereby binding the anode plate to the cathode plate to form a bipolar plate module.

After studying Wangerow, applicant cannot find where Wangerow at least requires the limitations of screen printing a sealing material upon one of an anode plate and a cathode plate; positioning the MEA upon one of the anode plate and the cathode plate; placing the other one of the anode plate and the cathode plate upon the MEA, to form a sealing layer between the anode and the cathode plates thereby binding the anode plate to the cathode plate to form a bipolar plate module.

Instead, applicant finds Wangerow's Abstract and Fig. 1 to teach constructing a fuel cell unit comprising a polymer electrolyte membrane 13, an anode 14, a cathode 15 and then applying a sealing gaskets 16, 17 in a "peripheral sealing region of the polymer electrolyte membrane 13" so as to seal the polymer electrolyte membrane 13 between two bipolar separator plates 11, 12. Hence, Wangerow is silent about screen printing (or, in general, depositing) sealing material upon either of an anode plate or a

cathode plate, with an MEA therebetween, so as to bind the anode plate to the cathode plate to form a bipolar plate module, as claim 7 requires. Therefore, It follows, that Wangerow cannot form a sealing layer between the anode and the cathode plates.

Specifically regarding claim 8, applicant asserts that claim 8 at least requires that the sealing material is deposited upon a perimeter of the anode or the cathode plate. As mentioned above, since applicant finds Wangerow to be silent about depositing sealing material upon either of an anode plate or a cathode plate, then it follows that Wangerow does not deposit sealing material upon a perimeter of the anode or the cathode, as claim 8 requires.

Specifically regarding claim 13, applicant asserts that claim 13 at least requires that the sealing material fills grooves formed on the anode plate and the cathode plate to form the insulation layer. As mentioned above, since applicant finds Wangerow to be silent about depositing sealing material upon either of an anode plate or a cathode plate, then logic dictates that Wangerow does not fill grooves formed on the anode plate and the cathode plate to form the insulation layer, as claim 13 requires.

Specifically regarding claim 14, applicant asserts that claim 14 at least requires that the curing includes applying pressure to the anode and the cathode plates. As mentioned above, since applicant finds Wangerow to be silent about depositing sealing material upon either of an anode plate or a cathode plate, then logic dictates that Wangerow does not require that the curing includes applying pressure to the anode and the cathode plates, as claim 14 requires.

Since the Examiner has not identified specific elements within Wangerow that the Examiner might allege are equivalent to the claimed invention, applicant finds these rejections of claims 7-9 and 12-14 to merely be conjecture.

Therefore, applicant respectfully submits that independent claim 7, from which claims 8-9 and 12-14 directly or indirectly depend, are not anticipated by Wangerow, as the inventions defined thereby are not identically disclosed in Wangerow, as required by 35 U.S.C. § 102(e).

Consequently, claims 7-9 and 12-14 should be allowed over Wangerow. Accordingly, withdrawal of the rejection of claims 7-9 and 12-14 and favorable reconsideration of claims 7-9 and 12-14 are respectfully requested.

Claim Rejections – 35 U.S.C. § 103

a) The Examiner has rejected claims 3-6 under 35 U.S.C. 103(a) as being unpatentable over Frank.

The Examiner concedes that Frank does not teach the elements of claims 3-6, but the Examiner asserts that it would have been obvious to apply those elements to the invention.

Since claim 1 is patentable, then claims 3-6, which depend directly from claim 1, are also patentable, at least on this basis.

Also, applicant asserts that the specific elements of claims 3-6 (i.e., respectively, sealing material is epoxy nitrile, the pressure for injecting the sealing material is

between about 300-700 lb/in², the temperature of the sealing material when injected into the mold is between about 75—400 degrees Fahrenheit, and the curing includes applying pressure to the anode and the cathode plates) have been found to provide preferred manufacturing/operation results for the claimed bipolar plate. Thus, claims 3-6 are not obvious in view of Frank.

Therefore, claims 3-6 are patentable over Frank, as the claimed invention defined thereby is not suggested within Frank, nor is there any suggestion or motivation to modify this reference's teachings in order to teach or suggest the claimed limitations, as required by 35 U.S.C. § 103.

Consequently, claims 3-6 should be allowed over Frank. Accordingly, the withdrawal of the rejections of claims 3-6 and the favorable reconsideration of claims 3-6 are respectfully requested.

b) The Examiner has rejected claims 10 and 11 under 35 U.S.C. 103(a) as being unpatentable over Wangerow.

The Examiner concedes that Wangerow does not teach the elements of claims 10-11, but the Examiner asserts that it would have been obvious to apply those elements to the invention.

Since claim 7 is patentable, then claims 10-11, which depend directly from claim 7, are also patentable, at least on this basis.

Also, applicant asserts that the specific elements of claims 10-11 (i.e., respectively, sealing material is epoxy nitrile and positioning the MEA upon one of the anode plate and the cathode plate is performed before the screen printing) has been

found to provide preferred manufacturing/operational results for the claimed bipolar plate. Thus, claims 10-11 are not obvious in view of Wangerow.


Therefore, claims 10-11 are patentable over Wangerow, as the claimed invention defined thereby is not suggested within Wangerow, nor is there any suggestion or motivation to modify this reference's teachings in order to teach or suggest the claimed limitations, as required by 35 U.S.C. § 103.

Consequently, claims 10-11 should be allowed over Wangerow. Accordingly, the withdrawal of the rejections of claims 10-11 and the favorable reconsideration of claims 10-11 are respectfully requested.

For all the reasons described in the preceding paragraphs, applicant respectfully submits that the present application is now in condition for allowance. Accordingly, a timely action to that end is courteously solicited.

If the Examiner has any remaining questions or concerns, or would prefer claim language different from that included herein, the favor of a telephone call to applicant's attorneys is requested.

Respectfully submitted,


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